

**OPTONICA**

# SERVICE MANUAL

RP-2626H



STEREO TURN TABLE

## MODEL RP-2626H

In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used.

### SPECIFICATIONS

#### GENERAL

Power source: AC 110/220/240V, 50/60Hz  
Power consumption: 5W  
Semiconductors: 1-IC

25-transistor  
7-diode  
2-hall elements  
Width: 455mm  
Height: 147mm  
Depth: 355mm  
Weight: 10 kg

Dimensions:  
(with dust cover)

Weight:

#### TURNTABLE

Motor: DC servo motor with 72-pole frequency generator  
Drive system: Direct-drive system

Speed: 33-1/3 and 45rpm  
Speed control range: Within  $\pm 4\%$  (Individual control for 33-1/3 & 45rpm)  
Wow & Flutter:  $\pm 0.045\%$  (DIN 45 507)  
0.03% (JIS C-5521)  
Rumble: Better than 68dB (DIN-B)  
Turntable platter: 31cm (12in.) aluminum diecast with stroboscope mark

#### TONEARM

Type: Static-balance S-shaped pipe arm  
Effective length: 210mm  
Overhang: 11mm  
Off-set angle: 19°  
Cartridge weight range: 4 ~ 12grams

Specifications are subject to change without prior notice.

# SHARP CORPORATION OSAKA, JAPAN

## DESIGNATION OF PARTS

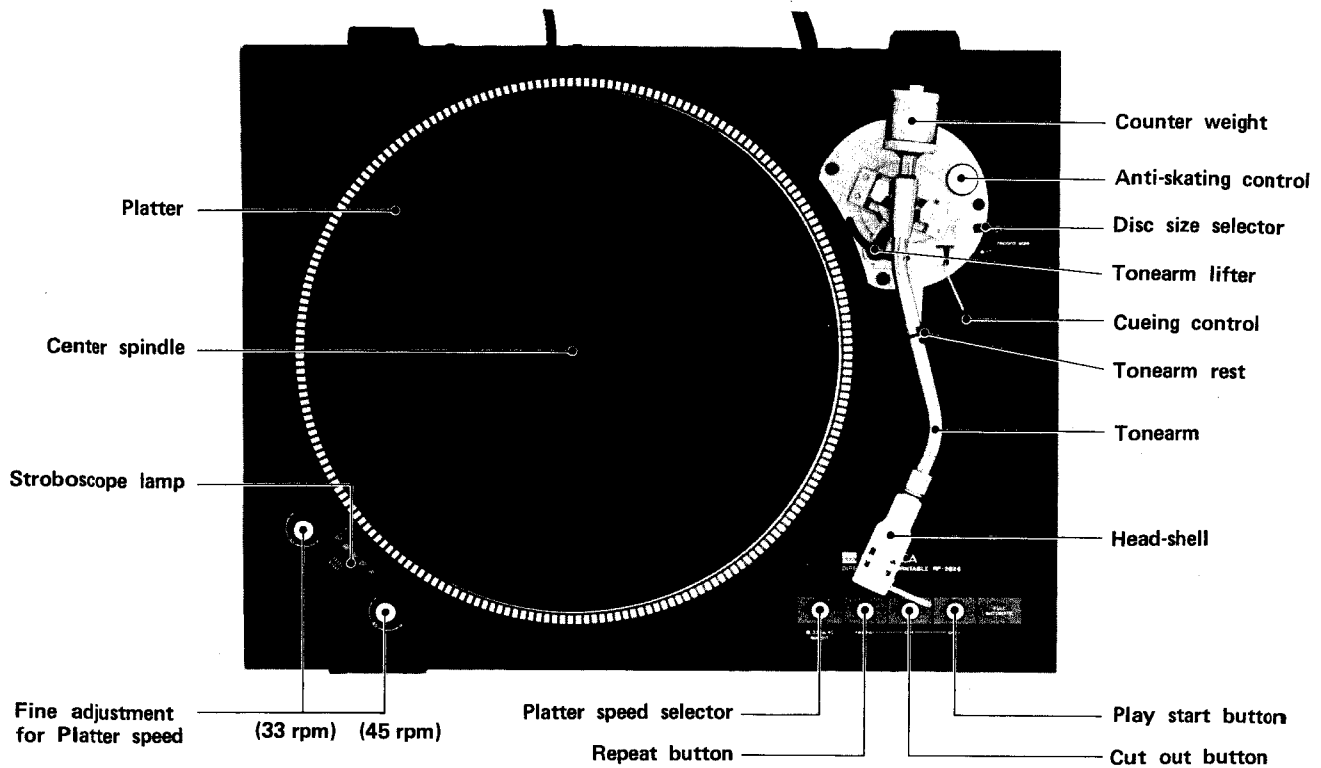


Figure 2-1

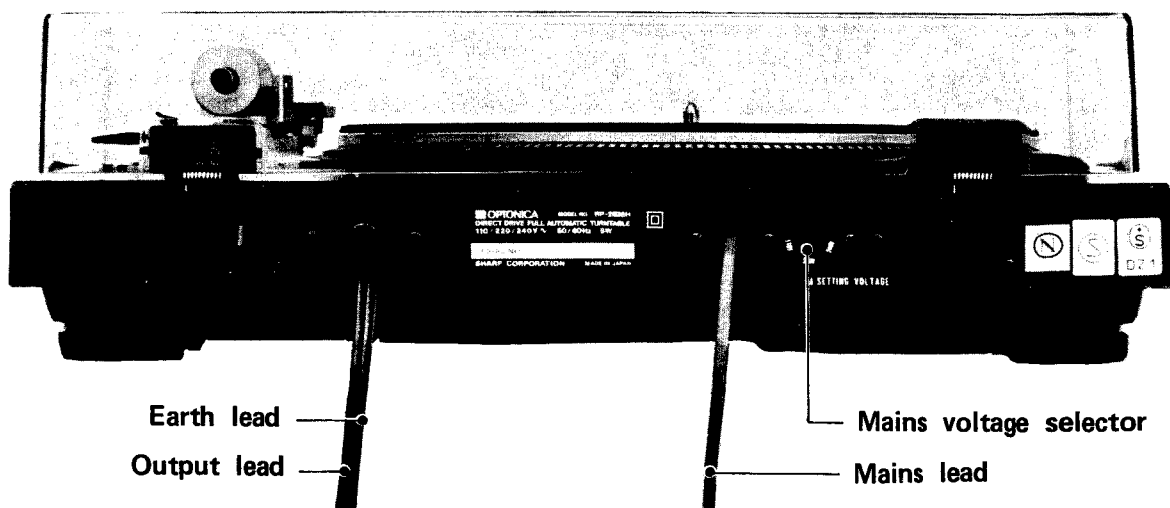


Figure 2-2

## DISASSEMBLY

\* Disconnect all leads connected to the back of the unit.

1. Remove fourteen (14) screws retaining the bottom cover. (Refer to Figure 3-1)
2. Mechanical parts removal. (Refer to Figures 13-1 and 15-1)

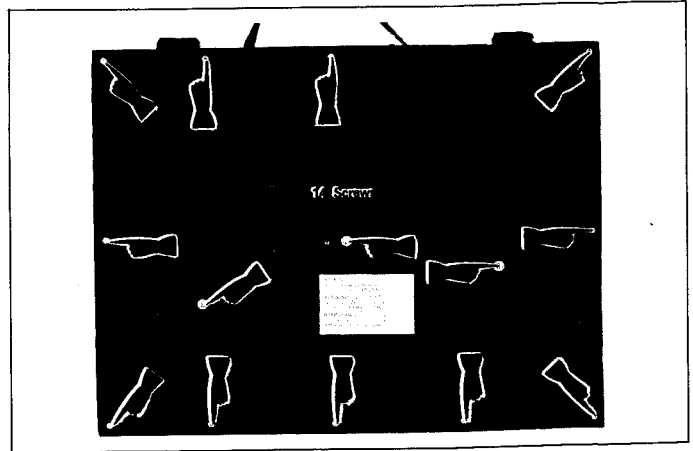


Figure 3-1

## VOLTAGE SELECTION

Check the preset voltage before connecting the mains plug to a mains outlet. If the setting is different from your local supply mains voltage, the selector must be re-set as follows. Rotate the selector with a screw driver, aligning the arrow mark to your local voltage number.

### Note:

Since this set uses DC motor, the operation is regardless of whether a household power supply is of 50Hz or 60Hz.

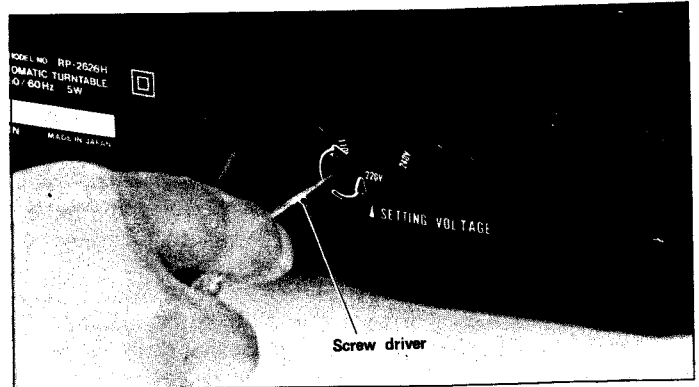


Figure 3-2

## MOUNTING OF PHONO-CARTRIDGE ON HEAD-SHELL

1. Referring to Figure 3-3, connect the cartridge to the head-shell by use of leads.
2. Provide a distance of 50mm between the stylus end and the rubber packing on the head-shell. (Refer to Figure 3-4)

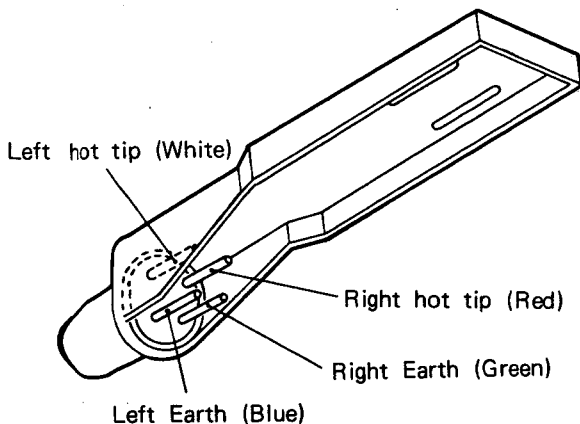


Figure 3-3

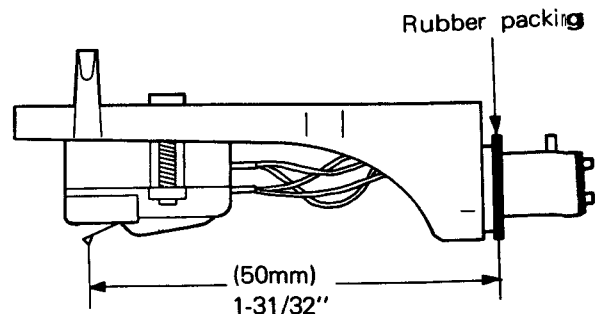
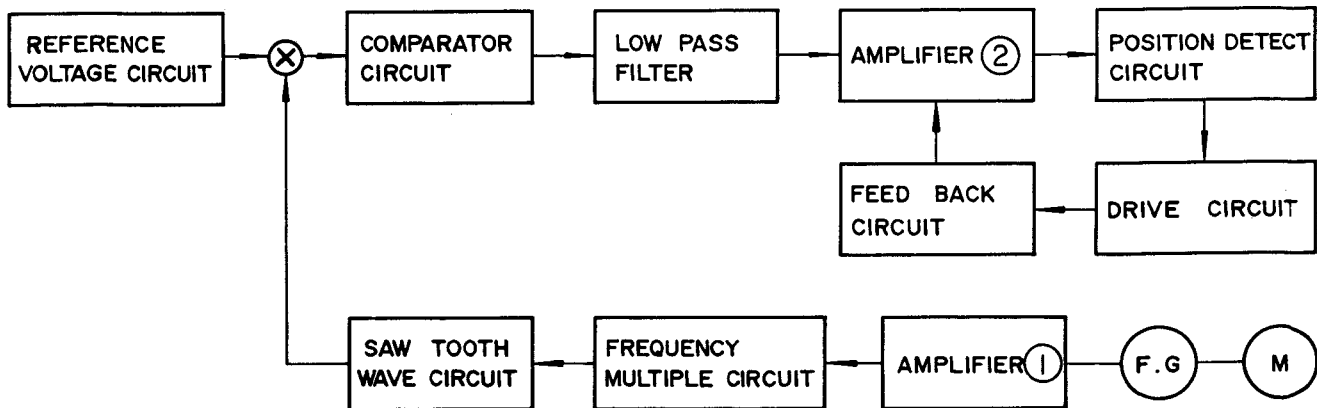


Figure 3-4

## BEHAVIORS OF CONTROL CIRCUIT

This control circuit is a frequency generator servo type that detects output of the dynamo synchronizing with the motor

so that this detected output is considered frequency, thereby controlling the speed of a disk to be used.



**Figure 4-1 BLOCK DIAGRAM**

\* Refer to Figures 4-1, 4-2 and 5-1.

### 1) FREQUENCY GENERATOR

The frequency generator consists of 72-pole magnet, 36-tooth multi-gap head and coil and it creates sine waves of 20 Hz and 27 Hz respectively when an LP disk and EP disk are played.

## 2) AMPLIFIER CIRCUIT ①

The amplifier circuit is of 2-stage differential type and it amplifies the output of frequency generator to produce square wave of 50% duty cycle.

Square-wave resistor VR1 (330 ohm B) is to adjust the square wave so that its duty cycle becomes 50%: this is because that the output of this circuit will be permitted to be multiplied by the frequency multiple circuit.

### 3) FREQUENCY MULTIPLE CIRCUIT

The frequency multiple circuit is to differentiate conversion output and non-conversion output (the two are of square wave) obtained from the said amplifier circuit so as to create pulses each having a swifter rising and a narrow width. Each of the pulses is then applied to the switching transistor in which it will be shaped to a saw tooth wave. Each of the switching transistors can be turned on when given a positive pulse so that the frequency be multiplied (doubled).

#### 4) SAW TOOTH WAVE GENERATOR CIRCUIT

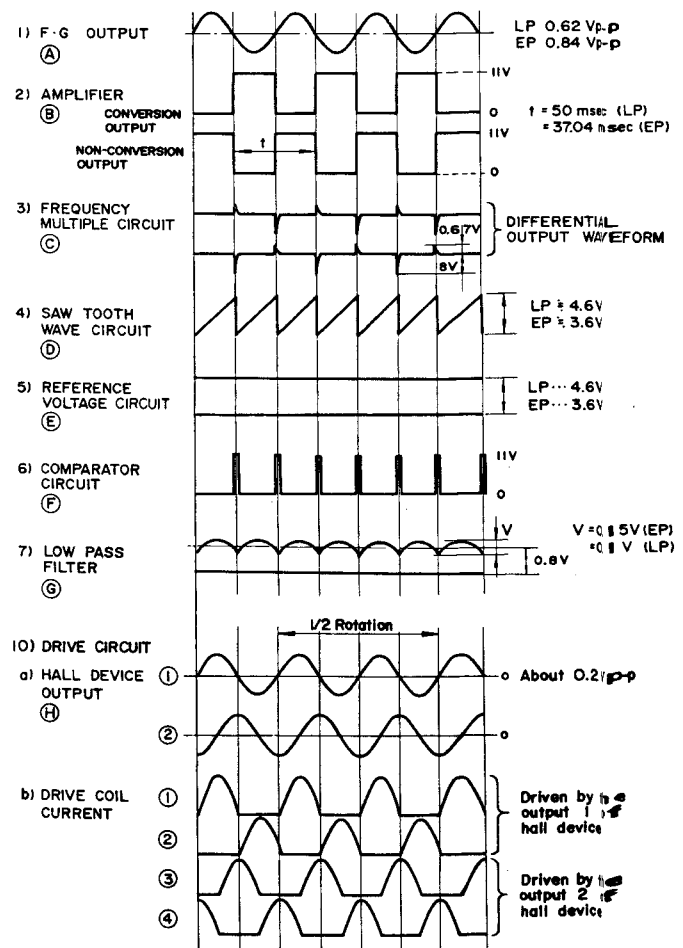
The generator circuit is composed of a C/R circuit which serves as charging unit and a switching transistor which works to discharge the voltage stored in the capacitor in an instant, and it is thus able to obtain saw tooth waves with the height being nearly in proportion to a given frequency.

### 5) REFERENCE VOLTAGE CIRCUIT

The reference voltage circuit is to produce a reference voltage that determines the rotation number of motor, in which output of the voltage regulated circuit is resistor-divided to be made a constant voltage. Variable resistor is provided to permit the voltage-division ratio be varied, thereby the motor's rotation number being variable.

Waveforms of the Circuits (with DC 20 V)

(The points ① to ⑧ are identical to those indicated in the annexed "Circuit Diagram" Figure 5-1.)



**Figure 4-2 WAVE FORMS OF THE CIRCUIT**

## 6) COMPARATOR CIRCUIT

The comparator circuit consists of differential comparator circuit and switching transistor and it is to compare the level of the saw tooth wave 4) and that of reference voltage 5) to each other so that there will be on-off pulses available. off-pulse is obtained when the height of saw tooth wave is lower than the level of reference voltage while on-pulse when the former is higher than the latter: a variation of the frequency (that of the motor's rotation number) is converted into an average variation of the output pulse.

## 7) LOW-PASS FILTER

The low-pass filter is a 2-stage CR primary low-pass filter that is to have the output pulse of comparator circuit be smoothed.

## 8) AMPLIFIER CIRCUIT ②

The amplifier circuit is to amplify the output of low-pass filter to apply it to the hall device.

## 9) POSITION DETECT CIRCUIT

The position detect circuit serves to detect N-pole or S-pole of the rotor magnet by means of hall device so that it can determine the sequence by which 4 drive coils will be given a current one after another. Meanwhile, voltage applied to the hall device is regulated by the control circuit described in the steps 1) to 8) above and output voltage of the hall device is varied according to a variation of the rotation number of motor.

## 10) DRIVE CIRCUIT

The drive circuit is the one which amplifies the output of hall device to have a current run in the drive coil.

## 11) FEEDBACK CIRCUIT

The feedback circuit is to carry out a negative feedback operation from the drive circuit to the amplifier circuit ②, thus letting the entire operation of control circuit be more stabilized.

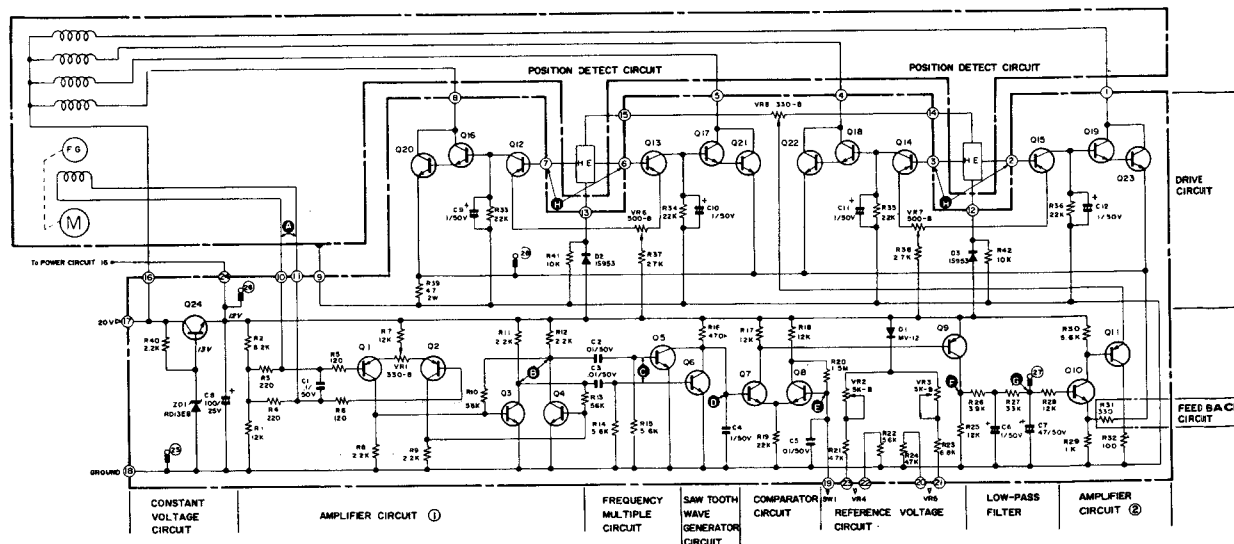


Figure 5-1

## CIRCUIT MOTION WHILE THE ROTATION NUMBER BEING VARIED

Circuit Motion while the Rotation Number Being Varied

In which,  $N_1 > N_2 > N_3$

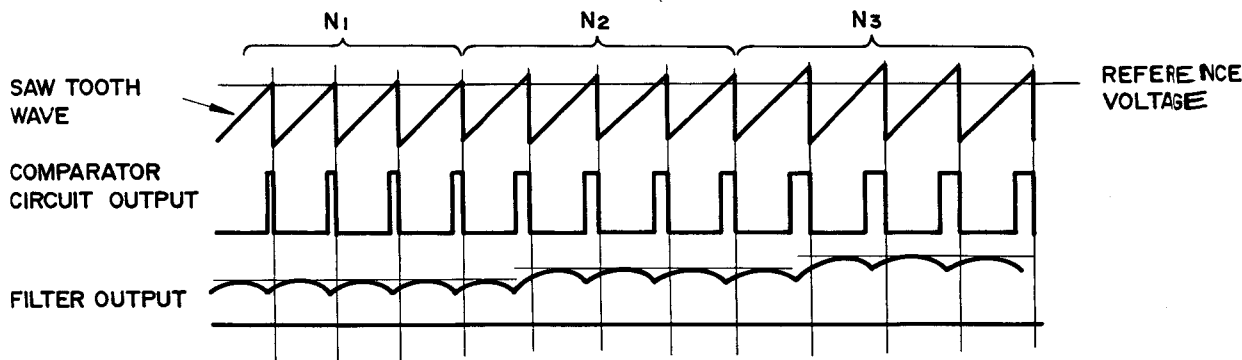


Figure 5-2

## ADJUSTMENT OF THE MECHANISM

### ■ AUTO READ-IN ADJUSTMENT

(Refer to Figure 6-1)

Before the set leaves the factory, descending position of the stylus has been adjusted properly but it may be, however, that under automatic play mode the stylus top end cannot descend on the starting groove correctly because of the adjustment having been deviated due to vibration during the transportation or if a disc record outside the specification is used. If the descending position of the stylus is not correct, adjust the screw provided at the bottom of this unit.

When the stylus descends outside the record periphery, rotate the screw toward 'IN'.

While, when it descends inside the starting groove of the record, rotate the screw toward 'OUT'.

Motion of one graduation of the screw can change the descending position by 1.5mm.

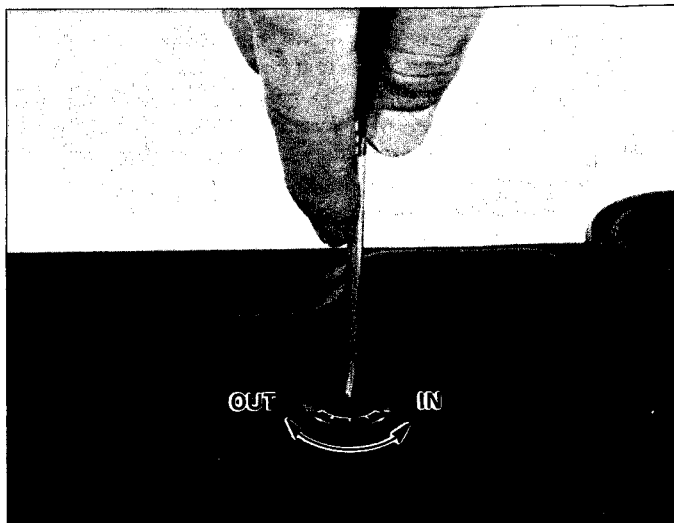


Figure 6-1

### ■ STYLUS POSITION ADJUSTMENT

(Refer to Figure 6-2)

In the auto return or auto lead-in operation or cueing-up operation, the stylus tends to scratch a record disk surface if its setting height is lower than usual, or it may not descend exactly on the disk surface or hit the dust cover if the height is higher than normal. Therefore, take the following procedures to assure the rated stylus position.

- Positionally arranged the eccentric pin groove of the seesaw lever to direct to its longitudinal direction. See the photo.
- Set the cueing lever at "Up" position and rotate the nut of the elevation lever shaft to provide a clearance or approx.  $8 \pm 4$  mm between the stylus top and the disk surface.
- Place the unit in "auto lead-in" mode to allow the tonearm to come to above the disk surface, then stop the tonearm and adjust the eccentric pin of the seesaw lever so that a distance between the stylus top and the disk surface becomes  $8 \pm 4$  mm (at the time, keep the cueing lever at "Down" position).

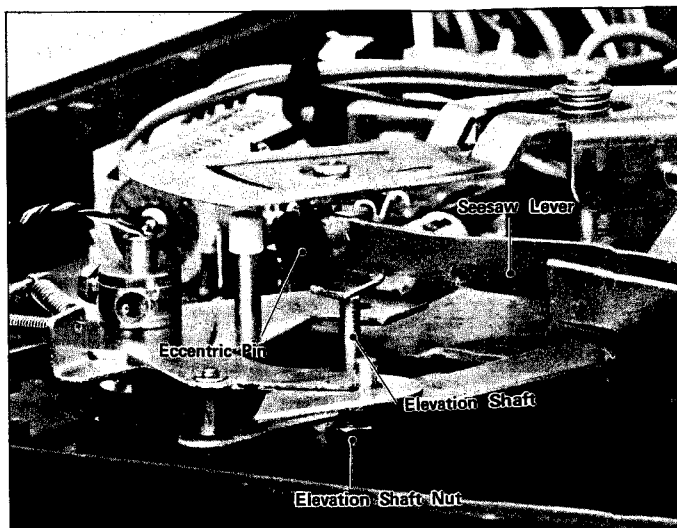


Figure 6-2

### ■ AUTO RETURN ADJUSTMENT

(Refer to Figure 6-3)

Turn the screw clockwise when return motion is too fast (before end of performance) and turn it counterclockwise when the arm doesn't return even when it has come near the label on the record.

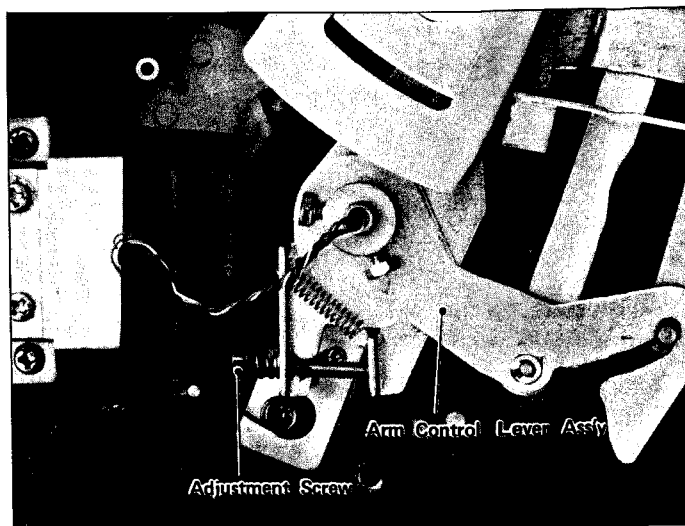


Figure 6-3

## ALIGNMENT OF THE CIRCUIT

### ■ FREQUENCY MULTIPLE ADJUSTMENT

(Refer to Figures 7-1 and 8-3)

1. Connect the oscilloscope to the pins 25 (GND) and 27 (+).
2. Adjust the semi-variable resistor (VR1) so that good waveform indicated in Figure 7-1.

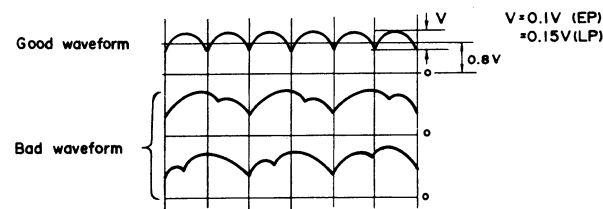


Figure 7-1

### ■ DRIVE CIRCUIT ADJUSTMENT

#### 1) HALL DEVICE (Refer to Figures 7-2 and 8-2)

1. Connect the oscilloscope to the pins 25 (GND) and 28 (+).
2. Adjust the semi-variable resistor (VR1104) so that good waveform indicated in Figure 7-2.

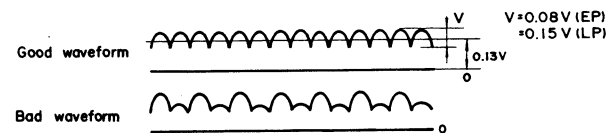


Figure 7-2

#### 2) 4-COIL CURRENT (Refer to Figures 7-3 and 8-2)

1. Connect the oscilloscope to the pins 25 (GND) and 28 (+).
2. Adjust the semi-variable resistors (VR6 and 7) so that good waveform indicated in Figure 7-3.

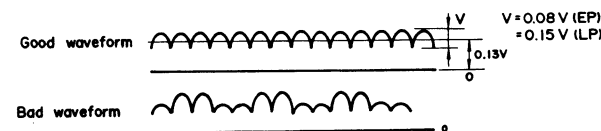


Figure 7-3

### ■ ADJUSTMENT OF THE MOTOR'S ROTATION

(Refer to Figures 8-1 and 8-2)

The rotational speed of turntable minutely varies according to the hour during a day, therefore, take the following procedures to obtain an exact speed.

1. Turn the speed fine adjustment knob clockwise or anti-clockwise to adjust so that the stripe pattern of a stroboscope provided at the platter looks like stationary. When the stripe pattern is moving in the turning direction of platter, this shows that the rotational speed of turntable is faster than as specified. In this case, adjust it by turning the speed fine adjustment knob toward 's'. Or, when the stripe pattern is moving against the turning direction of platter this shows that the turntable rotates slower than as specified. In such a case, adjust it by turning the speed fine adjustment knob toward 'f'.
2. When the servo-control P.W. board or other electrical parts are replaced for repairing, adjust the turntable speed in the following manner.
  - 1) Set the speed fine adjustment knobs (VR4, VR5) to the central position.
  - 2) Adjust the semi-variable resistors (VR2, VR3) so that the stripe pattern of a stroboscope provided at the platter looks like stationary.
    - VR2 ..... For 33-1/3 r.p.m. Adjust
    - VR3 ..... For 45 r.p.m. Adjust

### ■ STROBOSCOPE FREQUENCY ADJUSTMENT

(Refer to Figure 8-2)

1. Connect the frequency counter to the base of transistor (Q101) and ground.
2. Adjust the semi-variable resistor (VR101) so that the frequency counter indicate 120 Hz.

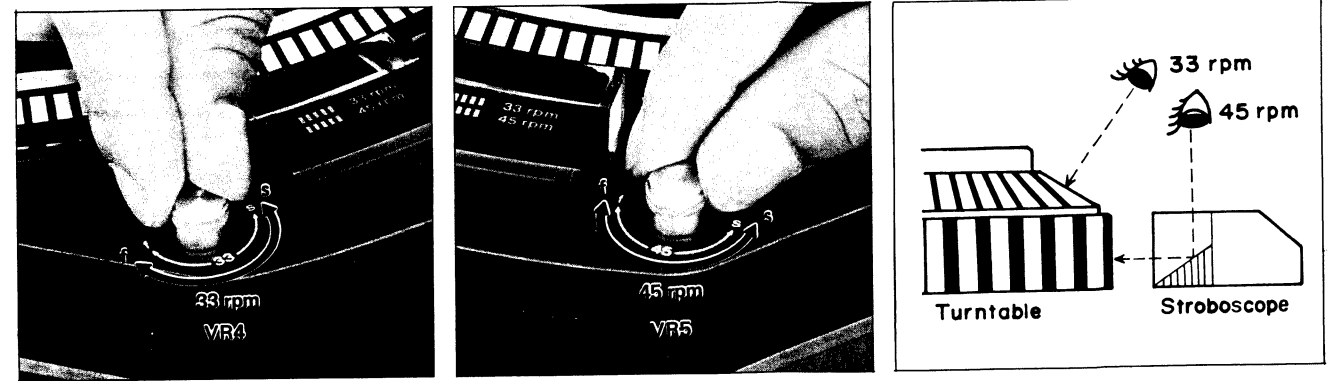


Figure 8-1

- VR1 : Frequency Multiple Circuit Adjust
- VR2 : Turntable Speed Adjust (33-1/3rpm)
- VR3 : Turntable Speed Adjust (45rpm)
- VR4 : Turntable Speed Fine Adjust (33-1/3rpm)
- VR5 : Turntable Speed Fine Adjust (45rpm)
- VR6 : 4 Coil Current Adjust
- VR7 : Hall Device Adjust
- VR101 : Stroboscope Frequency Adjust

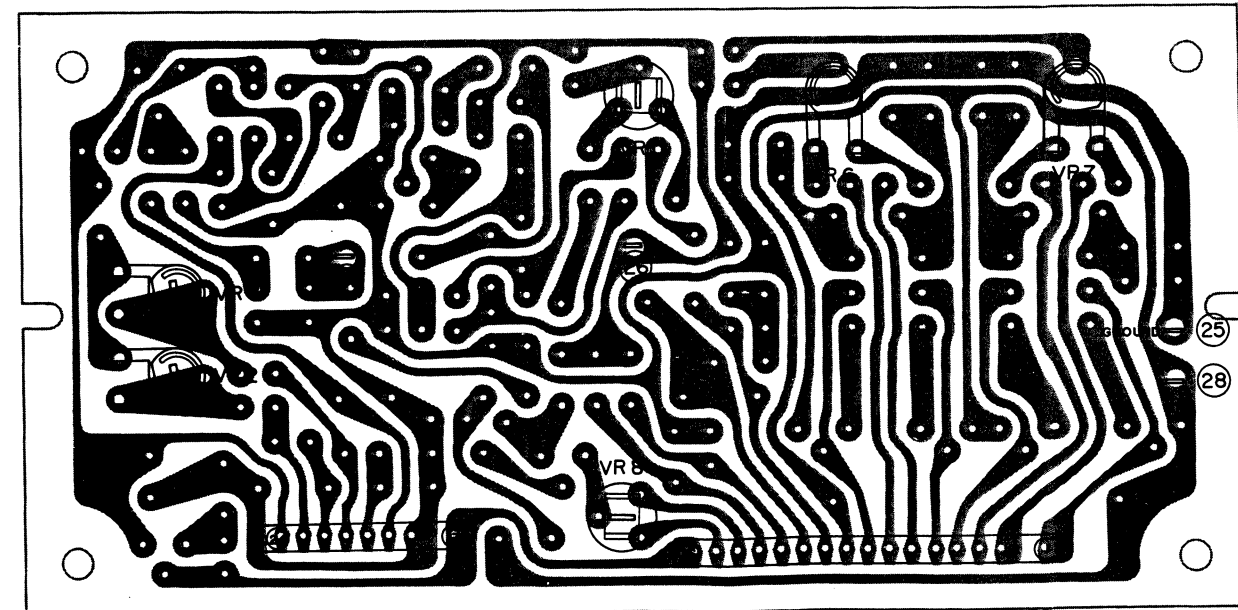
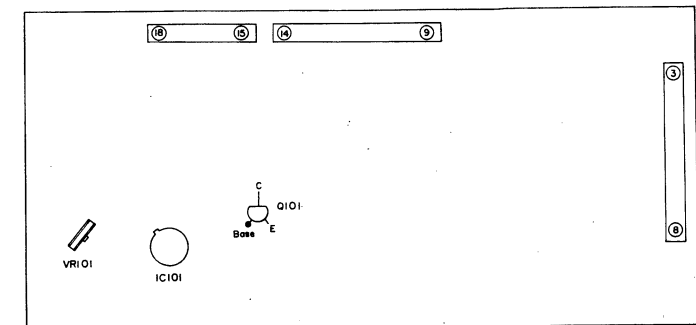
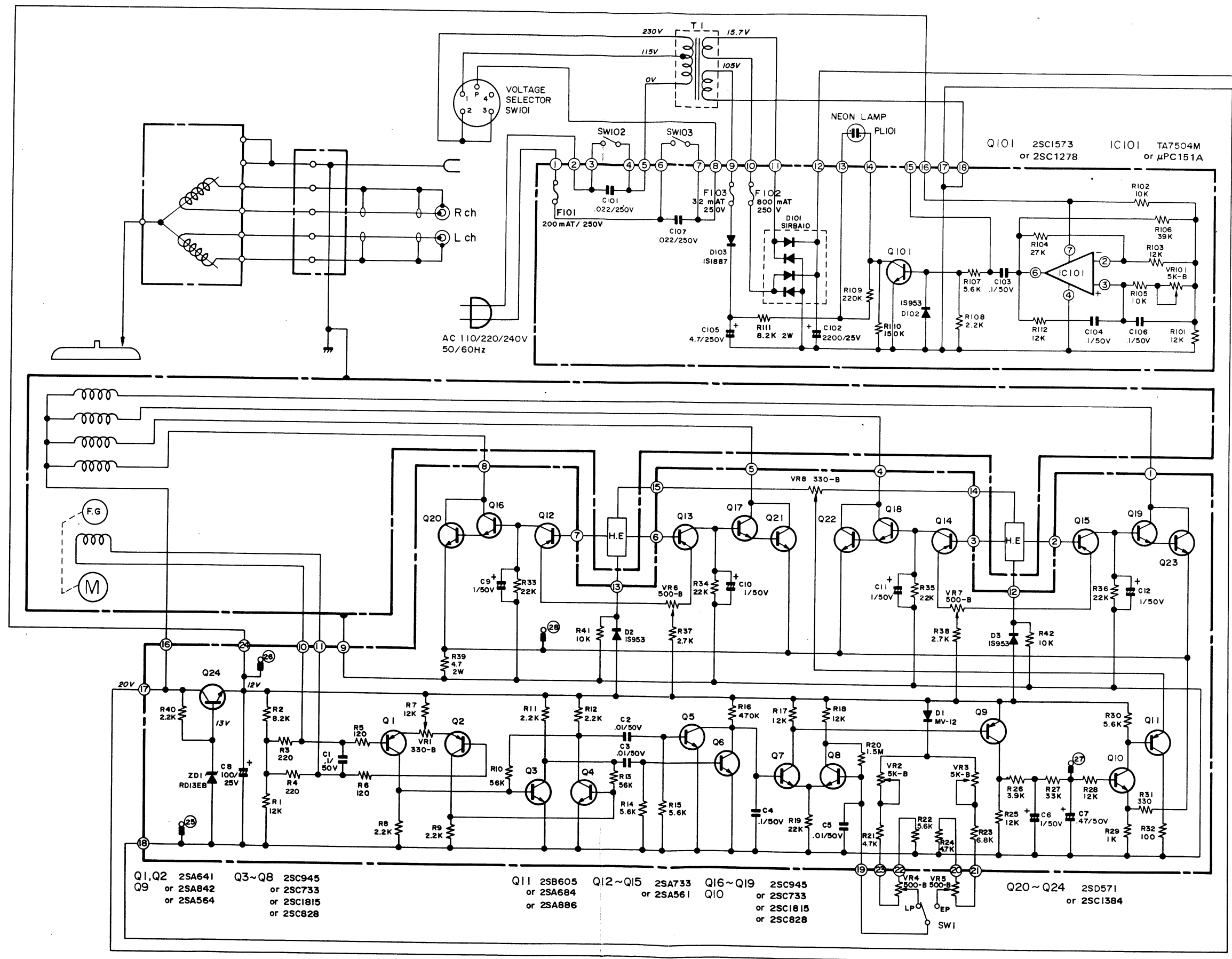


Figure 8-2 ALIGNMENT POINT



(Specifications or wiring diagrams of this model are subject to change for the improvement without prior notice.)

Figure 9-1 SCHEMATIC DIAGRAM



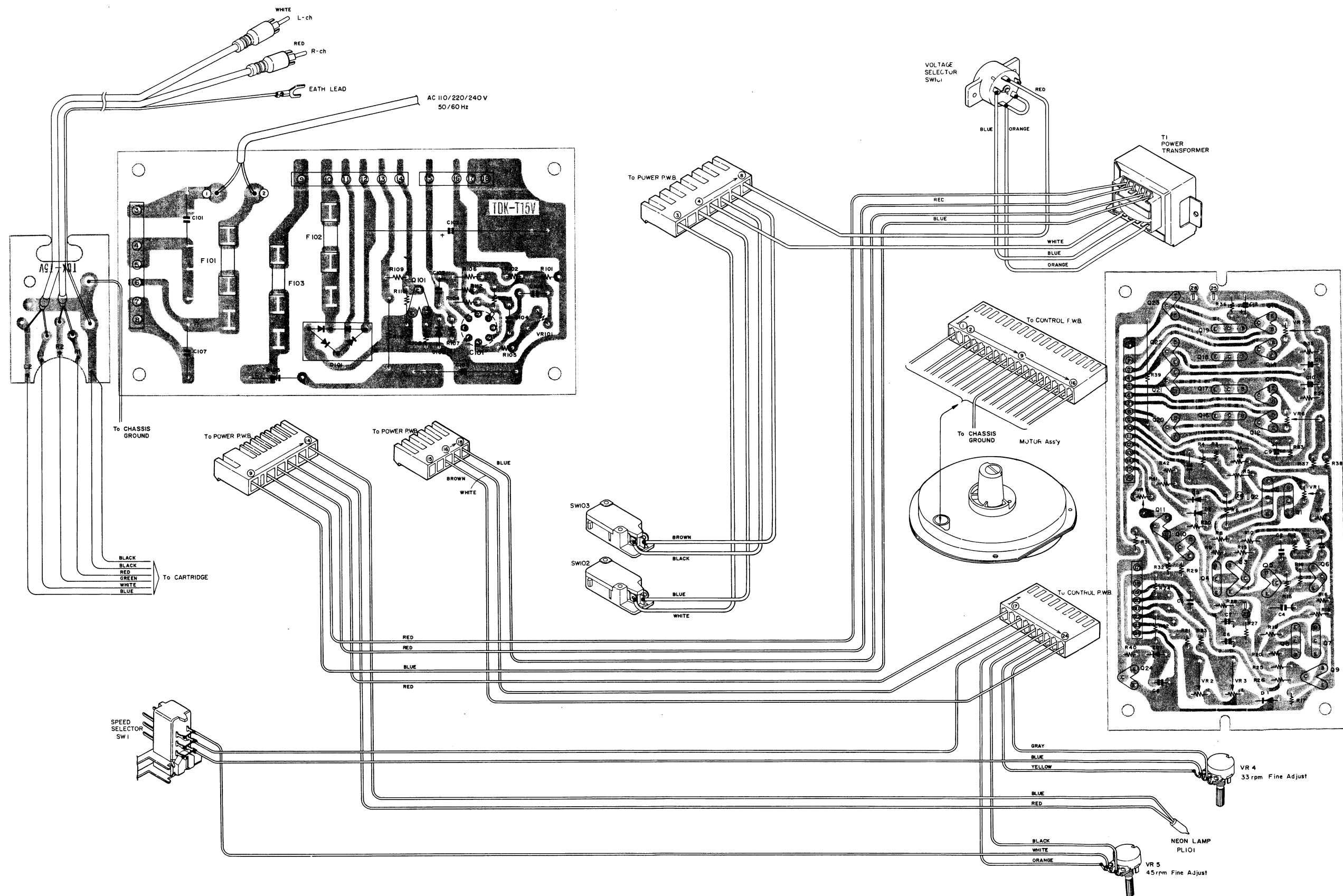


Figure 11-1 WIRING SIDE OF P.W. BOARD

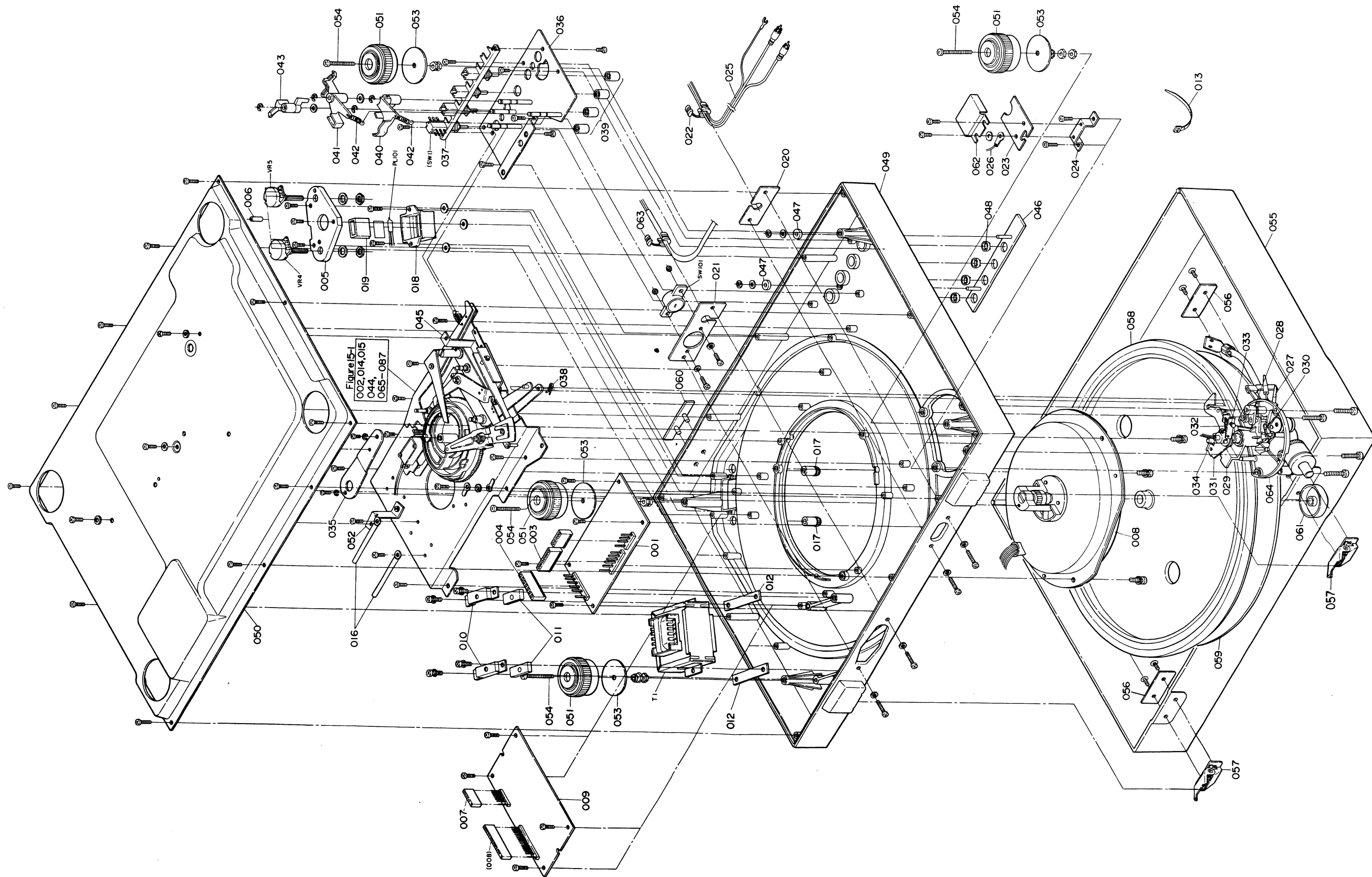


Figure 13-1 PLAYER EXPLODED VIEW (Cabinet)

# REPLACEMENT PARTS LIST

## "HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

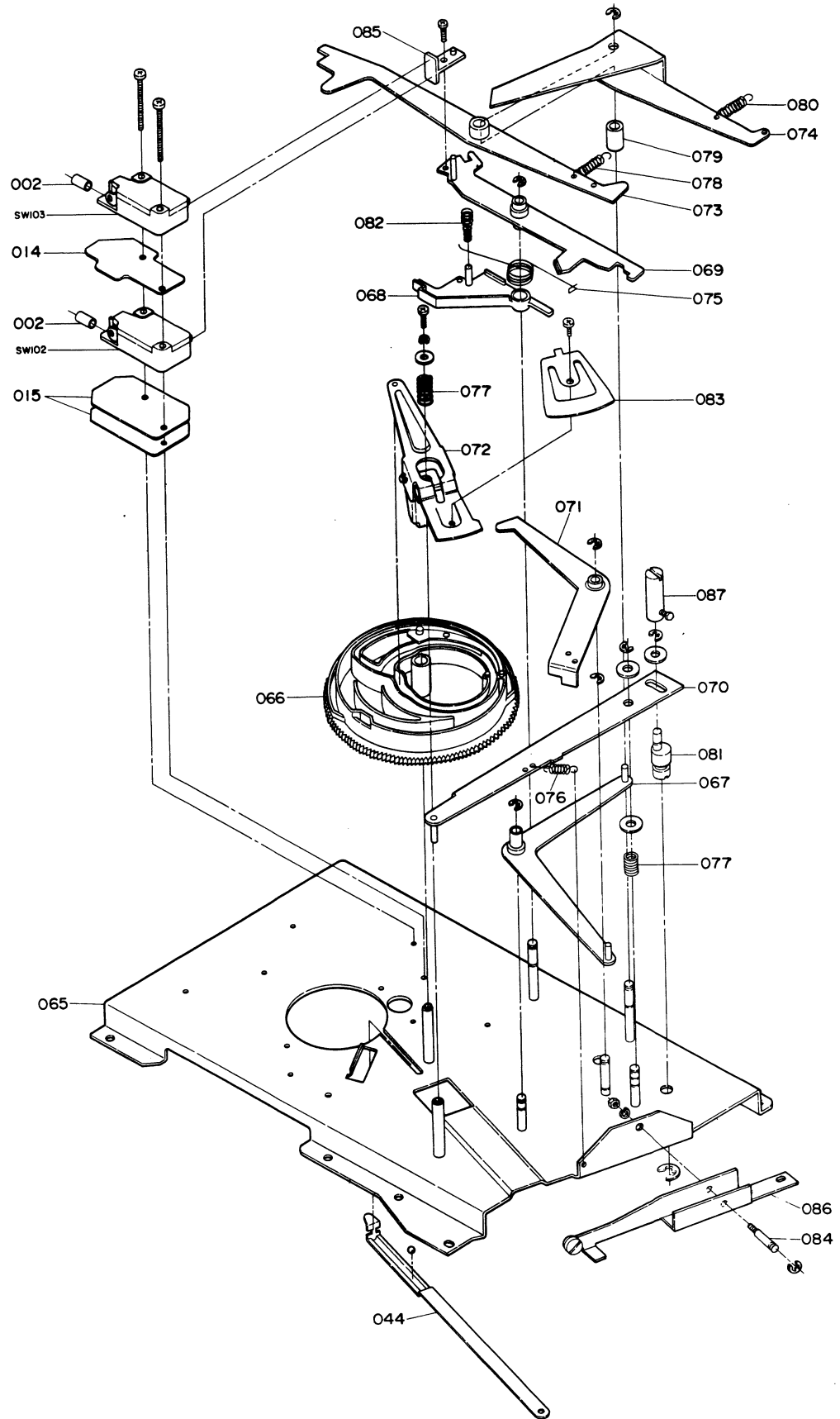


Figure 15-1 PLAYER EXPLODED VIEW (Sub-Chassis)

| REF. NO.   | PART NO.                | DESCRIPTION                                     | CODE | REF. NO.  | PART NO.       | DESCRIPTION  | CODE |
|--|-------------------------|---|------|---|----------------|--|------|
| INTEGRATED CIRCUIT   |                         |   |      | VR2   | 91Z5KOHMB      | 5K ohm (B), Turntable Speed Adjust (33-1/3 r.p.m.)       | **   |
| IC101  | 91Z $\mu$ PC151A        | OP Amp ( $\mu$ PC151A)                          | **   | VR3   | 91Z5KOHMB      | 5K ohm (B), Turntable Speed Adjust (45 r.p.m.)           | **   |
| Note:  | or 91ZTA7504M           |   |      | VR4   | 91Z702986      | 500 ohm (B), Turntable Speed Fine Adjust (33-1/3 r.p.m.) | **   |
| TRANSISTORS  |                         |   |      | VR5   | 91Z702986      | 500 ohm (B), Turntable Speed Fine Adjust (45 r.p.m.)     | **   |
| Q1, Q2   | 91Z2SA641               | Amplifier (1) (2SA641)                          | **   | VR6, VR7  | 91Z500OHMB     | 500 ohm (B), 4 Coil Current Adjust                       | **   |
| Q3, Q4   | 91Z2SC945               | Amplifier (1) (2SC945)                          | **   | VR8   | 91Z330OHMB     | 330 ohm (B), Hall Device Adjust                          | **   |
| Q5   | 91Z2SC945               | Frequency Multiple Circuit (2SC945)             | **   | VR101   | 91Z5KOHMB      | 5K ohm (B), Stroboscope Frequency Adjust                 | **   |
| Q6   | 91Z2SC945               | Saw Tooth Wave Generator (2SC945)               | **   | CAPACITORS  |                |  |      |
| Q7, Q8   | 91Z2SC945               | Comparator Circuit (2SC945)                     | **   | C1  | VCQYKU1HM104K  | .1MFD, 50V, $\pm$ 10%, Mylar                             | **   |
| Q9   | 91Z2SA641               | Comparator Circuit (2SA641)                     | **   | C2, C3  | VCQYKU1HM103K  | .01MFD, 50V, $\pm$ 10%, Mylar                            | **   |
| Q10  | 91Z2SC945               | Amplifier (2) (2SC945)                          | **   | C4  | VCQYKU1HM104K  | .1MFD, 50V, $\pm$ 10%, Mylar                             | **   |
| Q11  | 91Z2SB605               | Amplifier (2) (2SB605)                          | **   | C5  | VCQYKU1HM103K  | .01MFD, 50V, $\pm$ 10%, Mylar                            | **   |
| Q12, Q13, Q14, Q15, Q16, Q17, Q18, Q19, Q20, Q21, Q22, Q23 | 91Z2SA733               | Drive Circuit (2SA733)                          | **   | C6  | VCEALU1HC105M  | 1MFD, 50V, $\pm$ 20%, Electrolytic                       | **   |
| Q24  | 91Z2SD571               | Drive Circuit (2SD571)                          | **   | C7  | VCEALU1HW474M  | .47MFD, 50V, $\pm$ 20%, Electrolytic                     | **   |
| Q101   | 91Z2SC1278              | Driver, Neon Lamp (2SC1278)                     | **   | C8  | VCEAAU1EW106Y  | 100MFD, 25V, +50-10%, Electrolytic                       | **   |
| Note:  |                         |   |      | C9, C10, C11, C12   | VCEAAU1HW105A  | 1MFD, 50V, +75-10%, Electrolytic                         | **   |
| Q1, Q2, Q9   | or 91Z2SA842, 91Z2SA564 |   |      | C101  | 91ZRIFAPME271Y | .022MFD, 250V  | **   |
| Q3 - Q8  | or 91Z2SC733            |   |      | C102  | VCEAAU1EW228Y  | 2200MFD, 25V, +50-10%, Electrolytic                      | **   |
| Q11  | or 91Z2SA684, 91Z2SA886 |   |      | C103, C104  | VCQYKU1HM104K  | .1MFD, 50V, $\pm$ 10%, Mylar                             | **   |
| Q12 - Q15  | or 91Z2SA561            |   |      | C105  | VCEAAU2EW475Y  | 4.7MFD, 250V, +50-10%, Electrolytic                      | **   |
| Q10, Q16 - Q19   | or 91Z2SC733            |   |      | C106  | VCQYKU1HM104K  | .1MFD, 50V, $\pm$ 10%, Mylar                             | **   |
| Q20 - Q24  | or 91Z2SC1384           |   |      | C107  | 91ZR1FAPME271Y | .022MFD, 250V  | **   |
| Q101   | or 91Z2SC1573           |   |      | RESISTORS   |                |  |      |
| DIODES   |                         |   |      | (Unless otherwise specified resistors are 1/4W, $\pm$ 5%, Carbon type.) |                |  |      |
| D1   | 91ZMV-12                | Reference Voltage Circuit (MV-12)               | **   | R1  | VRD-SU2EY123J  | 12K ohm  | **   |
| D2, D3   | 91Z1S953                | Drive Circuit (1S953)                           | **   | R2  | VRD-SU2EY822J  | 8.2K ohm   | **   |
| D101   | 91ZSIRBA10              | Rectifier (S1RBA10)                             | **   | R3, R4  | VRD-SU2EY221J  | 220 ohm  | **   |
| D102   | 91Z1S953                | Neon Lamp Drive Circuit (1S953)                 | **   | R5, R6  | VRD-SU2EY121J  | 120 ohm  | **   |
| D103   | 91Z1S1887               | Rectifier (1S1887)                              | **   | R7  | VRD-SU2EY123J  | 12K ohm  | **   |
| ZD1  | 91ZRD13E(B)             | Constant Voltage Circuit (RD13EB)               | **   | R8, R9  | VRD-SU2EY222J  | 2.2K ohm   | **   |
| TRANSFORMER  |                         |   |      | R10   | VRD-SU2EY563J  | 56K ohm  | **   |
| T1   | 91Z871324               | Power   | **   | R11, R12  | VRD-SU2EY222J  | 2.2K ohm   | **   |
| CONTROLS   |                         |   |      | R13   | VRD-SU2EY563J  | 56K ohm  | **   |
| VR1  | 91Z330OHMB              | 330 ohm, (B), Frequency Multiple Circuit Adjust | **   | R14, R15  | VRD-SU2EY562J  | 5.6K ohm   | **   |
|  |                         |   |      | R16   | VRD-SU2EY471J  | 470K ohm   | **   |
|  |                         |   |      | R17, R18  | VRD-SU2EY123J  | 12K ohm  | **   |
|  |                         |   |      | R19   | VRD-SU2EY223J  | 22K ohm  | **   |
|  |                         |   |      | R20   | VRD-SU2EY155J  | 1.5 Meg ohm  | **   |
|  |                         |   |      | R21   | VRD-SU2EY472J  | 4.7K ohm   | **   |
|  |                         |   |      | R22   | VRD-SU2EY562J  | 5.6K ohm   | **   |
|  |                         |   |      | R23   | VRD-SU2EY682J  | 6.8K ohm   | **   |
|  |                         |   |      | R24   | VRD-SU2EY472J  | 4.7K ohm   | **   |

\*\* : Price will be quoted upon receipt of order.

PARTS LIST

| REF. NO.                     | PART NO.      | DESCRIPTION                    | CODE | REF. NO. | PART NO.      | DESCRIPTION                   | CODE |
|------------------------------|---------------|--------------------------------|------|----------|---------------|-------------------------------|------|
| R25                          | VRD-SU2EY123J | 12K ohm                        | **   | 034      | 91Z891452-1   | Friction Rubber               | **   |
| R26                          | VRD-SU2EY392J | 3.9K ohm                       | **   | 035      | 91Z895585     | Plate, Main Gear              | **   |
| R27                          | VRD-SU2EY333J | 33K ohm                        | **   | 036      | 91Z871208     | Bracket, Operation            | **   |
| R28                          | VRD-SU2EY123J | 12K ohm                        | **   | 037      | 91Z871209     | Push Switch Ass'y             | **   |
| R29                          | VRD-SU2EY102J | 1K ohm                         | **   | 038      | 91Z891092     | Pin, Auto Return Arm          | **   |
| R30                          | VRD-SU2EY562J | 5.6K ohm                       | **   | 039      | 91Z895688     | Button, Push Switch           | **   |
| R31                          | VRD-SU2EY331J | 330 ohm                        | **   | 040      | 91Z895588     | Lever, Reject                 | **   |
| R32                          | VRD-SU2EY101J | 100 ohm                        | **   | 041      | 91Z895589     | Lever, Start                  | **   |
| R33, R34, R35, R36, R37, R38 | VRD-SU2EY223J | 22K ohm                        | **   | 042      | 91Z891443     | Spring, Start Lever           | **   |
| R39                          | VRD-SU2EY222J | 2.2K ohm                       | **   | 043      | 91Z895590     | Lever, Repeat                 | **   |
| R40                          | VRD-SU2EY103J | 10K ohm                        | **   | 044      | 91Z870066     | Arm, Auto Return              | **   |
| R41, R42                     | VRD-SU2EY103J | 10K ohm                        | **   | 045      | 91Z892809-1   | Bracket, Bottom Cover         | **   |
| R101                         | VRD-SU2EY123J | 12K ohm                        | **   |          |               | Retaining                     | **   |
| R102                         | VRD-SU2EY103J | 10K ohm                        | **   | 046      | 91Z895586     | Operation Plate               | **   |
| R103                         | VRD-SU2EY123J | 12K ohm                        | **   | 047      | 91Z892940-1   | Rubber                        | **   |
| R104                         | VRD-SU2EY273J | 27K ohm                        | **   | 048      | 91Z895587     | Ring, Operation Plate         | **   |
| R105                         | VRD-SU2EY103J | 10K ohm                        | **   | 049      | 91Z846367-4   | Cabinet                       | **   |
| R106                         | VRD-SU2EY393J | 39K ohm                        | **   | 050      | 91Z846368-2   | Bottom Cover                  | **   |
| R107                         | VRD-SU2EY562J | 5.6K ohm                       | **   | 051      | 91Z896387     | Leg                           | **   |
| R108                         | VRD-SU2EY222J | 2.2K ohm                       | **   | 052      | 91Z890238-6   | Bracket, Bottom Cover         | **   |
| R109                         | VRD-SU2EY224J | 220K ohm                       | **   |          |               | Retaining                     | **   |
| R110                         | VRD-SU2EY154J | 150K ohm                       | **   | 053      | 91Z895691     | Plate, Leg                    | **   |
| R111                         | VRD-SU2EY123J | 12K ohm                        | **   | 054      | 91Z895967     | Screw, Leg Retaining          | **   |
| R112                         | VRD-SU2EY123J | 12K ohm                        | **   | 055      | 91Z851097-3   | Dust Cover                    | **   |
| MISCELLANEOUS                |               |                                |      | 056      | 91Z895231     | Plate, Hinge                  | **   |
| 001                          | 91Z871189     | Power Circuit Ass'y            | **   | 057      | 91Z895215     | Hinge Ass'y                   | **   |
| 002                          | 91Z892484     | Tube, Insulator                | **   | 058      | 91Z620026     | Turntable                     | **   |
| 003                          | 91Z895758     | Connector Ass'y                | **   | 059      | 91Z871160     | Sheet, Turntable              | **   |
| 004                          | 91Z704151-1   | Socket, Power                  | **   | 060      | HBDGD3054AFSA | Badge, OPTONICA               | AC   |
| 005                          | 91Z895591     | Bracket, Lamp/Volume           | **   |          |               | (91Z893820)                   | **   |
| 006                          | 91Z702233-3   | Tube, Insulator                | **   | 061      | 91Z890876     | EP Adaptor                    | **   |
| 007                          | 91Z895733     | Connector, Ass'y               | **   | 062      | 91Z895218     | Shield, Output P.W. Board     | **   |
| 008                          | 91Z631318     | Motor Ass'y                    | **   | 063      | 91Z891568-2   | Bushing, Mains Supply Cord    | **   |
| 009                          | 91Z631347     | Control Circuit Ass'y          | **   |          |               | (BS)                          | **   |
| 010                          | 91Z894989     | Bracket, Power Transformer     | **   |          | 91Z891568-3   | Bushing, Mains Supply Cord    | **   |
|                              |               | Retaining                      | **   |          |               | (KEMA)                        | **   |
| 011                          | 91Z895734     | Bushing, Power Transformer     | **   | 064      | 91Z851319-1   | Pick-up Ass'y (Without        | **   |
| 012                          | 91Z895735     | Plate, Power Transformer       | **   |          |               | Cartridge)                    | **   |
|                              |               | Retaining                      | **   | 065      | 91Z851227     | Sub-chassis Ass'y             | **   |
| 013                          | 91Z894408     | Holder, Wire                   | **   | 066      | 91Z870317     | Main Gear Ass'y               | **   |
| 014                          | 91Z893327     | Insulator, Micro Switch        | **   | 067      | 91Z891431     | Switching Lever Ass'y         | **   |
| 015                          | 91Z895157     | Insulator, Micro Switch        | **   | 068      | 91Z891951     | Clutch Lever Ass'y            | **   |
| 016                          | 91Z890755     | Holder, Wire                   | **   | 069      | 91Z891016-1   | Switching Lever Ass'y         | **   |
| 017                          | 91Z892618     | Knob, Speed Fine Adjust        | **   | 070      | 91Z891435     | Select Arm Ass'y              | **   |
| 018                          | 91Z895592     | Cover, Lamp                    | **   | 071      | 91Z891437     | Select Guide Lever Ass'y      | **   |
| 019                          | 91Z895595     | Holder, Lamp                   | **   | 072      | 91Z870172     | Rotation Plate Ass'y          | **   |
| 020                          | 91Z893037     | Plate, Output Lead Hold        | **   | 073      | 91Z870157     | Start Lever Ass'y             | **   |
| 021                          | 91Z895596     | Plate, Voltage Selector Switch | **   | 074      | 91Z891444     | Lever, Repeat                 | **   |
| 022                          | 91Z891568-4   | Bushing, Output Lead           | **   | 075      | 91Z891474     | Spring, Clutch Lever          | **   |
| 023                          | 91Z895155-1   | P.W. Board, Output Lead        | **   | 076      | 91Z891438     | Spring, Select Arm            | **   |
| 024                          | 91Z895154-1   | Bracket, P.W. Board Retaining  | **   | 077      | 91Z891475     | Spring, Safety                | **   |
| 025                          | 91Z893699-1   | Output Lead Ass'y              | **   | 078      | 91Z891443     | Spring, Start Lever           | **   |
| 026                          | 91Z894509-6   | Earth Lead Ass'y               | **   | 079      | 91Z891445     | Bushing                       | **   |
| 027                          | 91Z896293     | Select Lever Ass'y             | **   | 080      | 91Z893566     | Spring, Repeat Lever          | **   |
| 028                          | 91Z895594     | Lever, Select Lever Ass'y      | **   | 081      | 91Z895720     | Shaft, Eccentric              | **   |
| 029                          | 91Z895593     | Lever, Selector                | **   | 082      | 91Z891947     | Spring, Clutch Lever          | **   |
| 030                          | 91Z700508-1   | Spring, Select Lever           | **   | 083      | 91Z891022     | Spring, Rotation Plate        | **   |
| 031                          | 91Z891482     | Arm Control Lever Ass'y        | **   | 084      | 91Z890095     | Shaft, See-saw Lever          | **   |
| 032                          | 91Z801553     | Spring, Arm Control Lever      | **   | 085      | 91Z894937     | Tip, Switching Lever          | **   |
| 033                          | 91Z813681     | Spring, Screw Lock             | **   | 086      | 91Z891785     | See-saw Lever Ass'y           | **   |
|                              |               |                                | **   | 087      | 91Z895721     | Screw, Auto Read-in Mechanism | **   |
|                              |               |                                | **   |          |               | Adjust                        | **   |
|                              |               |                                | **   | F101     | QFS-C201CAGNI | 200mAT/250V                   | **   |
|                              |               |                                | **   | F102     | QFS-C801CAGNI | 800mAT/250V                   | **   |
|                              |               |                                | **   | F103     | QFS-C320CAGNI | 32mAT/250V                    | **   |
|                              |               |                                | **   | PL101    | 91Z895757     | Neon Lamp                     | **   |

PARTS LIST

| REF. NO.     | PART NO.      | DESCRIPTION              | CODE | REF. NO. | PART NO.      | DESCRIPTION              | CODE |
|--------------|---------------|--------------------------|------|----------|---------------|--------------------------|------|
| SW1          | Not available | Speed Selector Switch    | N-A  |          | QACCV0001AGZZ | Mains Supply Cord (KEMA) | AP   |
|              | Part of 037   |                          |      |          | (91Z892280)   |                          |      |
| SW101        | QSOCE0551AFZZ | Switch, Voltage Selector | AG   |          | TINSL0138AFZZ | Operation Manual         | **   |
|              |               | (91Z871207)              |      |          | TTAGH0058AFZZ | Tag                      | **   |
| SW102, SW103 | 91Z895430-1   | Switch, Power            | **   |          |               |                          |      |
|              | QACCB0052AF09 | Mains Supply Cord (BS)   | AM   |          |               |                          |      |
|              |               | (91Z895961)              |      |          |               |                          |      |